Rocky Flats Cleanup Commission

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November 21, 1990

Ms. Beth Brainard
Department of Energy
PO Box 928
Golden, CO 80402-0928

Dear Beth:

Enclosed please find the Rocky Flats Cleanup Commission's comments on the Proposed Surface Water Interim Measures/Interim Remedial Action Plan and Decision Document, 903 Pad, Mound, and East Trenches Areas. We hope you will take the time to carefully review our comments and respond to those areas where we have questions or requests for additional information.

Also enclosed please find a supplemental inclusion concerning dust retardants that we intend as an appendix to our comments.

Thank you very much for your consideration, and we look forward to your response in the near future.

Sincerely,

Ken Korkia

Ken Korkia
Technical Assistant

Rocky Flats Cleanup Commission

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# COMMENTS

# IM/IRA

# 903 PAD, MOUND, AND EAST TRENCHES AREAS

NOVEMBER 21, 1990

## SECTION I: INTRODUCTION

Page 1-1, Line 3, Are the NPDES criteria established for the treated effluent currently applicable to the known contaminants? Reference is made throughout Section 2 that treatment occurs "as necessary to meet the Plant's NPDES permit." However, no reference is provided to assist the reader in determining whether or not the NPDES criteria are germane to a current understanding of the contaminants present. In other words, when the NPDES treatment standards were agreed upon, did they include all of the contaminants (ie: radionuclides) currently known to be present in the surface waters? Our understanding is that they do not. Thus, if the current NPDES treatment standards are not adequate in regard to the known contaminants, then we would disagree with the statement that there is no immediate threat to the public.

## SECTION 2: SITE CHARACTERIZATION

Page 2-1, Section 2.1.1, Why was reprocessing not mentioned as one of the activities at RFP? You only mention the manufacturing processes.

Pages 2-6/2-8, Section 2.1.3, Why do you consistently downplay the plant's proximity to populated areas? You need to change your descriptions based on distances from the plant's boundaries rather than its center, to provide a clearer idea of your actual proximity to populated areas.

Page 2-17, Section 2.2.3.2, This section describes ground water occurence in the surficial and bedrock units and goes on to describe it as a two-flow system that is hydraulically connected. There is, however, no mention or discussion of fractured bedrock (either at the interface of the alluvium and bedrock units or the presence of discrete fractures in the rock) which have the potential to transmit ground water at velocities that are far greater than either the alluvium or the bedrock. Additionally, there is little evidence presented that the analyst understands the physical or geologic materials aspects of the ground-water system. Experience in other areas of the Front Range has shown that the fractured bedrock can locally be a distinct and important hydrogeologic unit. Is there any evidence to definitively confirm or deny the presence of a fractured bedrock material under the areas of interest? What is the experience on site associated with foundation or retention structure excavations.

For example, has there been a need for subsurface cutoffs or "keys into bedrock associated with the design and construction of the various retention structures? Additionally, in the bedrock that has been cored to date, have fractures been discovered or even noted (logged) in the boring logs or were all consideration of these important geologic features overlooked? There is certainly little or no evidence that the scientist involved with this component of the work is even aware of their significance or concerned about their presence. Until this portion of the hydrogeologic model can be qualified and quantified, any conclusions regarding the importance or appropriate remedies for ground-water contamination will be potentially flawed!

Page 2-35, Section2.3.5.1, In the third paragraph a mention is made regarding concern for the elevated alluvial ground water level of uranium at the 881 Hillside. Is it possible that HEPA filters are buried at 881 and maybe are the source of uranium and plutonium?
In this area (OU 2), just as in the 881 Hillside, the most prevalent organic compound found in high concentrations is bis(2-Ethylhexyl) Phthalate. The ubiquitous occurrence of this material in grossly contaminated areas of Rocky Flats requires some explanation. One guess is that the material named is a synonym for di-octyl phthalate which is used for testing HEPA filters of which 14,000 are reputed to be in use at RFP. Again, is it possible that the widespread finding of this chemical is marking the presence of large numbers of dangerously contaminated HEPA filters that are spent and are buried at the site?

Page 2-36, Section 2.3.5.1, It appears that field and laboratory studies have not been done to confirm isotopic identity of the seeps, dissolved fractions, particle sizes, and/or solubility or nature of insoulbles in this area. The radioactive removal unit assumes ionic radioactive species. This is not an appropriate assumption. We would cite the following reports:

RFP 2901 Soil Decontamination at Rocky Flats
RFP 3914 Dust Transport-Wind Blown and Mechanical Resuspension
RFP 3130 Decontamination of Soil Containing Plutonium and Americium
RFP 3226 Removal of Plutonium Contaminated Soil from the 903 Lip Area During 1976 and 1978

These reports indicate that greater than 50% of the contamination at the 903 area is suspected to be in the less than 0.01 micron size range, whether colloidal and/or insoluble particles. If this study states that it is unable to quantify colloidal materials between the 0.1 to 0.45 micron size range, it is a significant failing considering the earlier studies. (Especially considering the sizes are orders of magnitude different, etc.) It is important to identify solubles versus insolubles. If much of the contamination is soluble, it may be amenable to precipitation and floculation. But if much of the contamination is in the insoluble form, and less than 0.01 microns in size, just how do you propose to deal with these extremely fine particles?

Page 2-38, Section 2.3.6 Air Contamination, There are several discrepencies noted. Ambient air concentration is stated to be approximately at or within 20.0 x 10(minus 6) pCi/l. Do you mean pCi/m(cubed)? You have used an aqueous quantity measure where an air quantity measure should have been used. This has been noted elsewhere in the report, where mg was used instead of pCi, etc. Please correct this and proof read this document for similar errors. The Gerhardt Langer resuspension report indicated much greater levels of airborne contaminants such as plutonium and americium. The DOE's Environmental Measurements Lab in New York has historically shown values of airborne contaminants in this area that has been orders of magnitude greater than the numbers cited with in this report. Please explain these discrepancies in reporting. Perhaps it would be helpful to adopt Dr. Langer's method of coating the back of the monitor with a thin film of oil to capture these minute particles that you seem to be missing. There is also a concern that the RFP is "over-correcting" for background radiation.

## SECTION 3: IDENTIFICATION OF IRA OBJECTIVES

Page 3-2, Section 3.3, With regards to waiving the ARAR's, we do not believe that they should be waived. Because the final action will not be in place until 1998, the ARAR's should be met as soon as possible.

## SECTION 4: IDENTIFICATION OF ALTERNATIVES

Page 4-2, Section 4.1.1, The discussion regarding seep SW-103

and the decision not to collect the seepage are superficial. No quantitative information is presented that demonstrates the basis for the decision, rather it is alluded that construction is going to be extremely difficult (and that it will create possibly dangerous working conditions), that it will disturb a (contaminated) wetland area and that the construction may release significant quantities of contaminants downstream. The discussions make it clear that the Plant's management and DOE do not want to contain the seep in question. What is unclear is why and whether or not they have the discretion to make that decision. If it were an industrial site, the company would be required to clean it up regardless of the complexity. Why is it different here? Specifically, each of the concerns cited can be remedied at a cost. Whether the cost is acceptable or not is unclear because the report's authors chose not to perform a cost analysis even though cost was allegedly an evaluation factor. Instead, the authors claim to have discovered insurmountable technical concerns that make this remedy unacceptable.

Pages 4-7/8, Table 4-1 lists dissolved gross alpha radiation at 17.70 pCi/l versus 632.0 pCi/l of total gross alpha radiation. Is this difference indicative of dissolved fractions versus insoluble fraction and/or colloidal particulates? There has been significant discussion amongst several physicists on oversight panels regarding the chemical forms of plutonium at the 903 area. Has the plutonium in soils and in seeps been identified to be ionic (eg: $PuCl_4$, $PuNO_3$, etc.), or complexed with volatile organics in the elemental state? Some of the discussion centered around concerns regarding volatile and explosive characteristics. Please elaborate upon these discussions/information.

A complete isotopic characterization and identification has not been done. Since Coors reportedly dumped 238-Pu, 235-U, and other Project Pluto wastes at the 903 area, they should be participating as a co-Respondent and Potentially Responsible Party in the assessment and clean-up costs of this area. The failure to completely identify and quantify all radioactive isotopes in this area is a significant deficit, as this could aid in determining relative risk to workers and to the public represented by the spread and environmental migration of these contaminants due to any disturbance of this area. Dr. Whicker from CSU is currently studying the soils and isotopes in this area. Please provide this report for review (and/or progress reports).

Page 4-11, Section 4.3.1, second full paragraph: The design criteria for the collection system is defined as the maximum flows observed in 1988, 1989, and 1990, excluding flows related to high precipitation events. Why are the high events excluded? These high events tend to erode large volumes of sediment and, as a result, would be expected to transmit large volumes of contaminants. There is no basis for being able to represent that the flow observations of three years are representative or even reasonable for the design of a collection system. Most developed counties in Colorado require storm water retention structures designed for flows generated by the 100-year precipitation event. In a situation where potentially harmful chemical and radiological contaminants are being released, why isn't a more practical and acceptable design standard being used?

Page 4-19, Second Paragraph. This paragraph discusses the approach being taken to empty each of the sumps that are installed. It is curious that the suggested approach is labor and equipment intensive. It would seem more appropriate to automate each sump with a float activated pump that periodically discharges its contents to either a single or to several moderately-sized storage tanks that are centrally located. These tanks could either be emptied by tank trucks or pumped along larger pipelines to the treatment location.

Page 4-19, Second Paragraph. In the description of the seep water collection methodology it is mentioned that Indiana Street outside the RFP boundary will be used as a tanker truck transport route. Given the alternative of building a road on the plant site and risking the resuspension of particulates, the proposed plan is only the "lesser of evils." All possible safety precautions must be investigated and implemented before any contaminants leave the plant site. Further, any trucks leaving the plant should be thoroughly inspected and washed of any contaminants that might be present.

Page 4-25, top paragraph, What exactly is present in the residual solids, or "sludges" as you describe them? We would like to review the Health and Safety Plan to insure that workers will be adequately trained to handle the residuals.

Page 4-35, Lab tests must be conducted for the prescribed procedures. What is the efficiency of the system when you have low concentrations of plutonium? These lab tests must use actual site water samples in order to fully determine the feasibility of the described system.

SECTION 6: PROPOSED IM/IRA

Page 6-1 section 6.1.1, second paragraph, What exactly happens to any overflow? Will you be treating only 10% of the water or perhaps even 20%? How quickly can you treat run-off?

Page 6-8, bottom paragraph, Your described procedure for collecting the residual mentions the use of a dumpster. Is a "dumpster" adequate for handling the waste? What is the volume of filter cake and how radioactive is it?

Page 6-9, section 6.1.2.3, We believe there should be continuous sampling procedures and not the "twice per week" schedule. You should also be testing the influent to the activated carbon columns for the presence of radionuclides. A holding tank should be installed between the filtration system and the GAC so testing can occur before any potentially contaminated water reaches the GAC. Also, a holding structure is necessary after the carbon units to allow testing for radionuclide contamination of the activated carbon columns. We would strongly encourage RFP use of the resultant "ultra-clean" water internally in order to achieve a goal of zero discharge from the plant.

Page 6-9, Section 6.2. Contrary to what is stated, the surface water collection system will not be relatively maintenance free. Sumps will fail and cleaning will be delayed as a result of budgetary considerations, scheduling problems and manpower limitations. The system proposed requires an active presence and involvement of operations and management personnel. The omission of more passive systems in association with a component oriented to eliminating infiltration of surface and ground waters through the contaminated materials is a mistake in judgement that will end up costing more than need be.

Page 6-10, section 6.2.3, Is there a plan to test the activated carbon columns after they are saturated, for the presence of radionuclides? Given the fact that they are to be sent off-site for regeneration, public and worker safety demands the assurance of no possible radionuclide contamination.

Page 6-11, section 6.3, The Community Relations Plan and the Health and Safety Plan should be reviewed by the public before construction begins.

Page 6-12, We would like to see the radionuclide extraction units tested first rather than accept the plan to bring the VOC and hydrocarbon extraction units onto line first.

Page 6-12, Section 6.4, The statement that starts on the seventh line from the bottom of the page indicates that the proposed method of treatment is not expected to attain chemical-specific ARAR's for metal and radionuclides. It is astonishing that after going through the exercise, the selected approach will not achieve the necessary levels of treatment.

In that light, we suggest that the entire approach be reconsidered and refocus on two components:

1. A system to limit the generation of contaminated ground water and surface water by installation of ground-water cutoffs, short and interim term capping of contaminated areas, diverting surface water runon and removing existing contaminated sediments in channels and ponds.

2. A system that collects all the remaining flows in adequately designed containment structures and treats those waters to ARAR levels.

Additionally, we suggest that a qualified and experienced hydrogeologist, surface water hydrologist and civil engineer be added to the current project team. It appears that their expertise is needed to provide a more complete assessment of these important site areas.

General Comment: The Reverse Osmosis Pilot Plant has not been listed as an alternative water treatment. Why not? This could save much effort and money, along with possibly being able to remove the more minute partlicles from the seeps.

General Comment: It appears that you are planning to utilize water treatment equipment that is made of materials that could be subject to degradation by the chemicals and radionuclides that are supposed to be filtered or treated in these seeps.

SECTION 7: ENVIRONMENTAL EFFECTS

Page 7-4, last paragraph: The Nevada site that is mentioned as a possible place for disposing of the dewatered solids is now closed. What will happen to the wastes and will they be in violation of RCRA? Can this low-level waste actually be a mixed waste that should be sent to WIPP? Exactly what type of waste is it, low-level or mixed?

Page 7-10, first full paragraph: You are to be congratulated for finally admitting there is at least an additive effect for total carcinogenic risk. We would like to see the risk analysis calculations.

You are advised to consult OSHA methodology for dealing with multiple contaminants in the workplace. Similar methodology is presented in the EPA publication, "Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A).

General Comment: We would like to obtain copies for review of the Environmental Restoration's Health and Safety Plan (ERHSPP), the Site-Specific Health and Safety Plan (SSHSP), the Phase II RFI/RIPS Workplan for OU 2, and the Plan for Contaminant Dispersion (PPCD).

General Comment: Plutonium transport by wind is notated as a significant and primary source of contaminant spread, but plutonium, americium, uranium, beryllium (plus any other dry contaminant) dust resuspension hazard is not addressed for safety measures for workers with respect to remediation efforts. We have serious concerns regarding encroachment on the 881 Hillside area from these radioactive and/or chemical seeps, leachate, and resuspension. The workers currently working on remediation efforts at the 881 area need to have the appropriate respiratory protection, especially in consideration of the radioactive dust resuspension problem. Inhalation of alpha particles is extremely hazardous. We would also remind you of our many requests for a containment building around remediation areas to control spread of contaminants during earth moving and other activities that will disturb these most contaminated areas of the plant site.

## SECTION 8: ENVIRONMENTAL EFFECTS OF THE ALTERNATIVES

No significant evaluation was undertaken of alternatives to limit the amounts of contaminated surface water created in the area of interest. It appears foolish to eliminate alternatives that would limit the amount of contaminated water that requires treatment.

## APPENDICES

In table A-9, the units mg/l should be changed to pCi/l.

## UNREFERENCED COMMENTS

1) Although defense contractors have essentially infinite funding, documents like these should be printed single spaced, double sided to save resources, both financial and natural. Also printing in standard Courier 10 type would make it easier for some to read.

2) We would like to suggest that in the future, you allow at least a 6-week lead time from release of the document to the public comment hearing to be held for the document in question.

3) We suggest that a source containment program that addresses some or all of the following components be added to the IM/IRA list:

* An engineered surface capping program to eliminate the infiltration of precipitation into and through the three contaminated areas of concern. Why continue contaminating surface or ground water in these areas? If they are probable sources, cap them even as a temporary measure. By cutting off the infiltrating precipitation, the amount of contaminated surface and ground water will be reduced.

* In areas where contaminated fine-grained materials are present and susceptible to wind transport or water erosion, cap them also using either inexpensive synthetic liners, a thin soil cap, or some of the inexpensive commercial dust suppressants.

(see the attachments describing dust suppressants)

* Place passive barriers to ground water movement around the three key areas. The placement of slurry walls, sheet pilings or drains to cutoff ground water flow from the up gradient direction is elementary, low risk, does not require extensive engineering or several years of data collection to accomplish.

* If cutoff structures are placed up gradient of the sources, a couple of wells in the source area will determine the effect. It it is found that the ground water is welling up from the underlying bedrock, then dewatering wells can be installed before the ground water is contaminated in the source areas.

* If sediments in the drainage ways or impoundments are contaminated, then excavate, dewater and stockpile them in covered waste piles.

* Design and install a surface water diversion system to keep surface sheet flow (runon) out of the area.

* Assess the sewage treatment plant effluent and, if necessary, pretreat it before it is discharged to pond B-3.

In general, it appears that there is not enough management interest in getting the subject areas under control. Rather, the focus seems to be on dismissing the potential for immediate problems and in developing a collection and treatment system that is only a small component of the solution. At this rate, the final containment of this area and the elimination of the source materials will take decades to accomplish.